

Name: _____

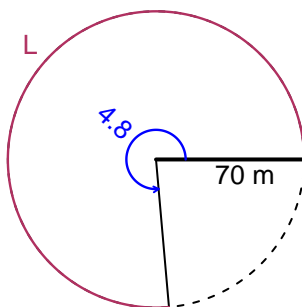
Date: _____

Trig Final (TEST v647)

- You should have a calculator (like [Desmos](#)) and a [unit-circle](#) reference sheet.

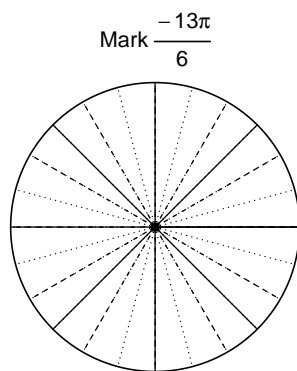
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 4.8 radians. The radius is 70 meters. How long is the arc in meters?

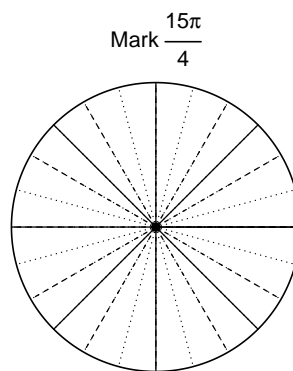


Question 2

Consider angles $-\frac{13\pi}{6}$ and $\frac{15\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(-\frac{13\pi}{6}\right)$ and $\sin\left(\frac{15\pi}{4}\right)$ by using a unit circle (provided separately).



Find $\cos(-13\pi/6)$



Find $\sin(15\pi/4)$

Question 3

If $\tan(\theta) = \frac{-45}{28}$, and θ is in quadrant IV, determine an exact value for $\cos(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = -7.27$ meters, an amplitude of 3.68 meters, and a frequency of 2.29 Hz. At $t = 0$, the mass is at the midline and moving down. Write an equation to model the height (y in meters) as a function of time (t in seconds).